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Synergistic Studies on the Removal of Dyes by Waste (Metroxylon sagu) Based Activated Carbon: An Optimization Study (Conference Paper) (Open Access)

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Abstract

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Physically activated carbon prepared from untreated (Metroxylon sagu) waste was used as adsorbents for the adsorption studies of methylene blue (MB) and gentian violet (GV) dye in aqueous solution. Response Surface Methodology (RSM) was employed to investigate the different operating parameters on the uptake of the dye molecule. The adsorbent before and after activation process were characterized to determine the specific surface area, iodine value, textural structure, and surface functional group. The results predicted using CCD model showed high values of regression coefficients R^2 (MB= 0.9944 and GV= 0.9845) indicating good agreement with experimental data. Characterization of PAC produced also showed that the activation conditions would find good-quality adsorbent with the highest BET surface area of 1423.5 m^2/g, iodine value of 1275.2 mg/g and well-forming pores distribution.

Indexed keywords

Engineering controlled terms: Activated carbon | Adsorbents | Aromatic compounds | Chemical activation | Iodine | Solutions

Engineering uncontrolled terms: Activation conditions | Activation process | Adsorption studies | Operating parameters | Optimization studies | Regression coefficient | Response surface methodology | Surface functional groups

Engineering main heading: Stripping (dyes)

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